
ARS &
OARDC in Ohio
Weather Stations
Toledo
Vegetable Crops
Fremont
Grape
Kingsville
Klyn/Sunleaf
Northwestern
Hoytville
Celeryville
Wooster
Coshocton
Mount
Vernon
Delaware
Columbus
Western
South Charleston
Miami Univ.
Oxford
PREC
Piketon
Southern
Ripley
Jackson
ARS Weather
Stations
ARS Laboratory/
Research Locations

USDA, Agricultural Research Service, Application Technology Research Unit Wooster, Ohio at the OSU/OARDC

Objectives: To conduct fundamental and developmental research on new, improved application technologies to protect floricultural, nursery, landscape and turf crops against damage from diseases, pests and adverse environmental conditions, while safeguarding environmental quality and worker safety, and enhancing profitability

Partnerships with the Green Industry

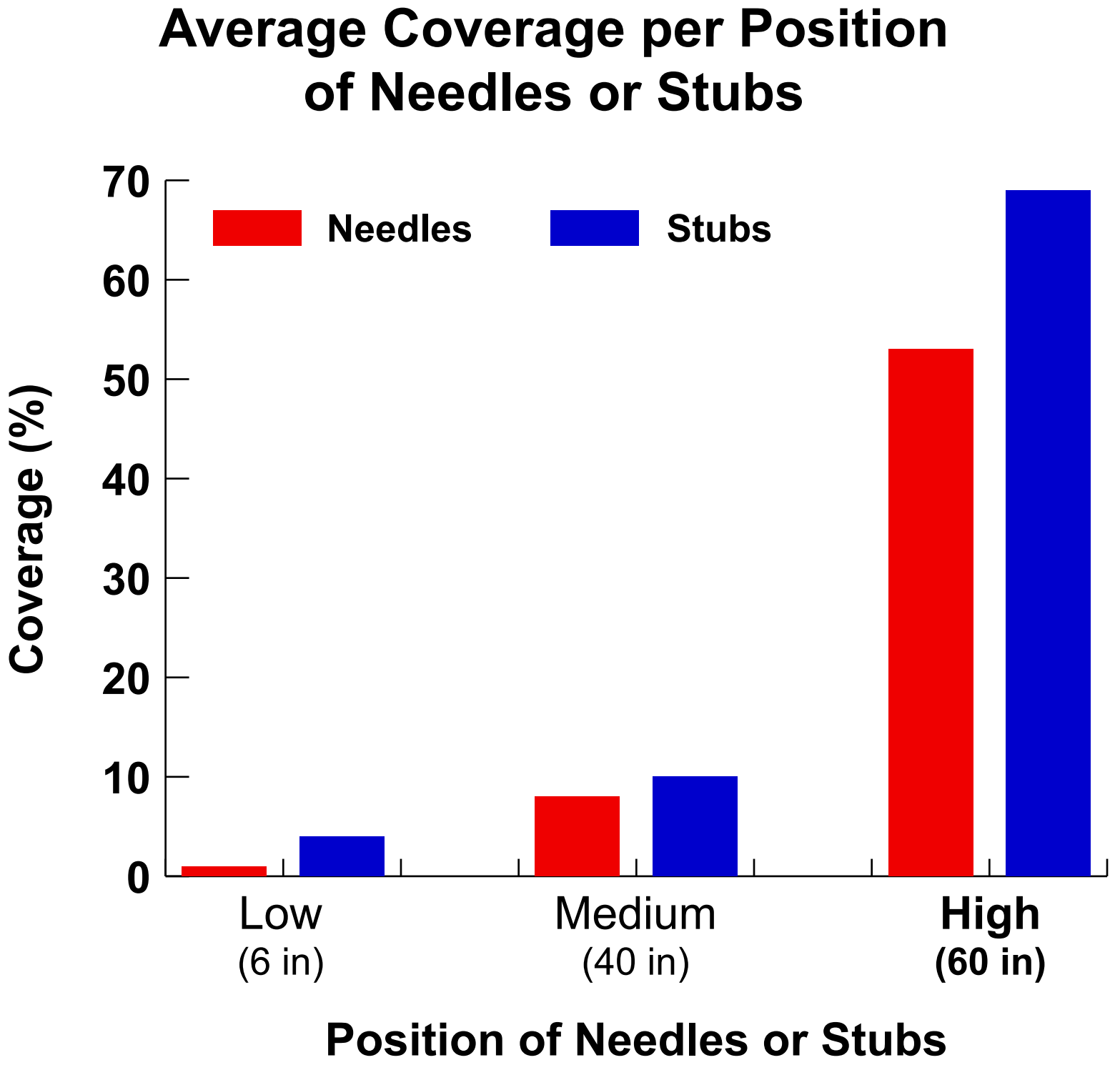
Food Quality Protection Act of 1996 (FQPA-96)

Replaced FIFRA including the " Delaney Clause"

Project Accomplishments or Progress

1. Improvement of spray coverage.
2. EBA assessment of coverage.
3. **Enhanced control of soil insect pests.**
4. Establishment of research weather stations.


3a1


Average Coverage per Position of Needles or Stubs
Needles
Stubs
Coverage (%)
70
60
50
40
30
20
10
0
Low
(6 in)
Medium
(40 in)
High
(60 in)
Position of Needles or Stubs

1. Improvement of spray coverage in nurseries and greenhouses.

USDA/ARS


Value to Stakeholders:
Reduced fungicide use
with improved efficacy.

USDA/ARS

2. **Assessment of pesticide coverage using electron beam analysis.**

Scanning Electron Microscopy (SEM)

+

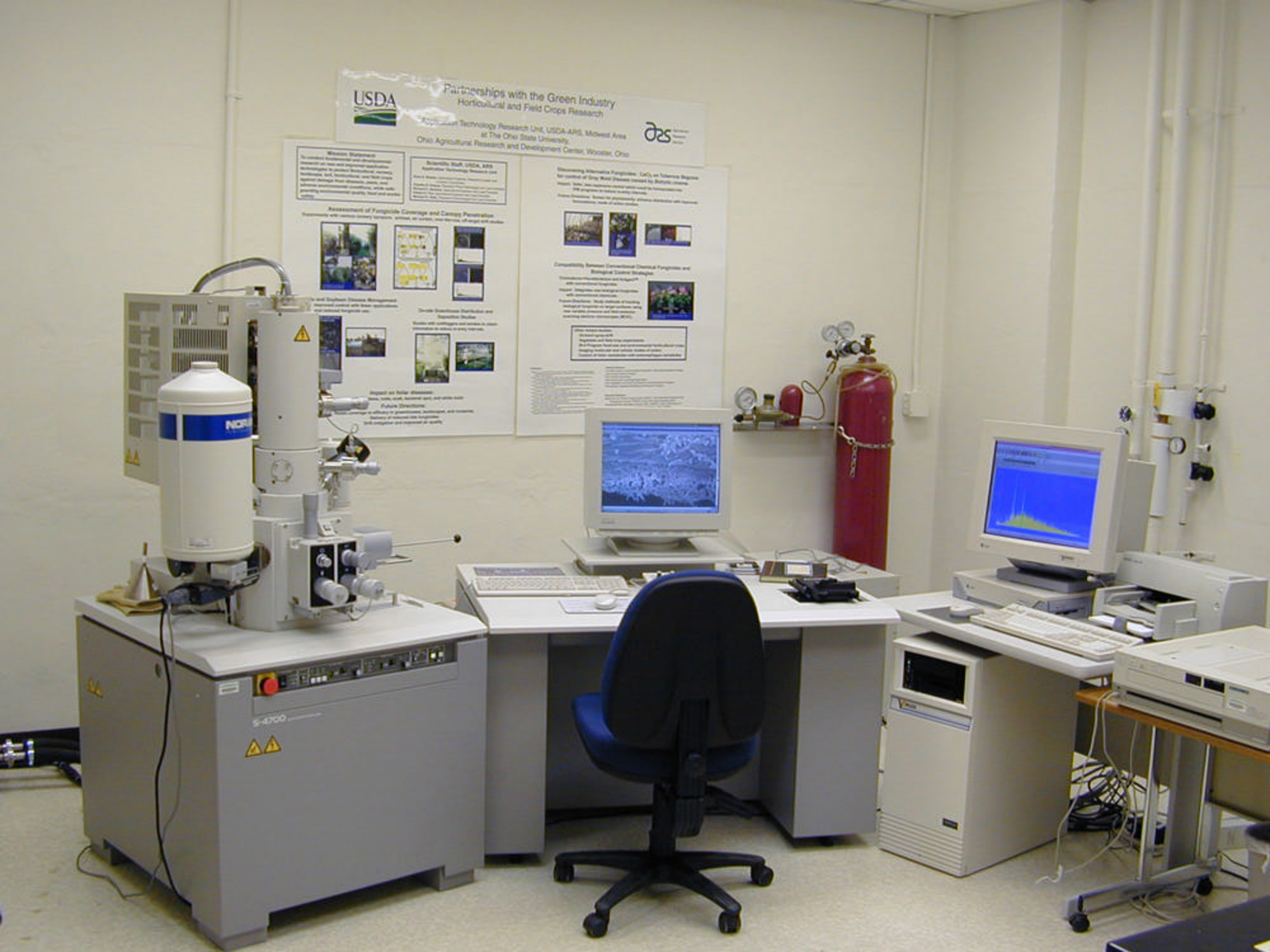
Energy Dispersive X-ray Analysis (EDXA)

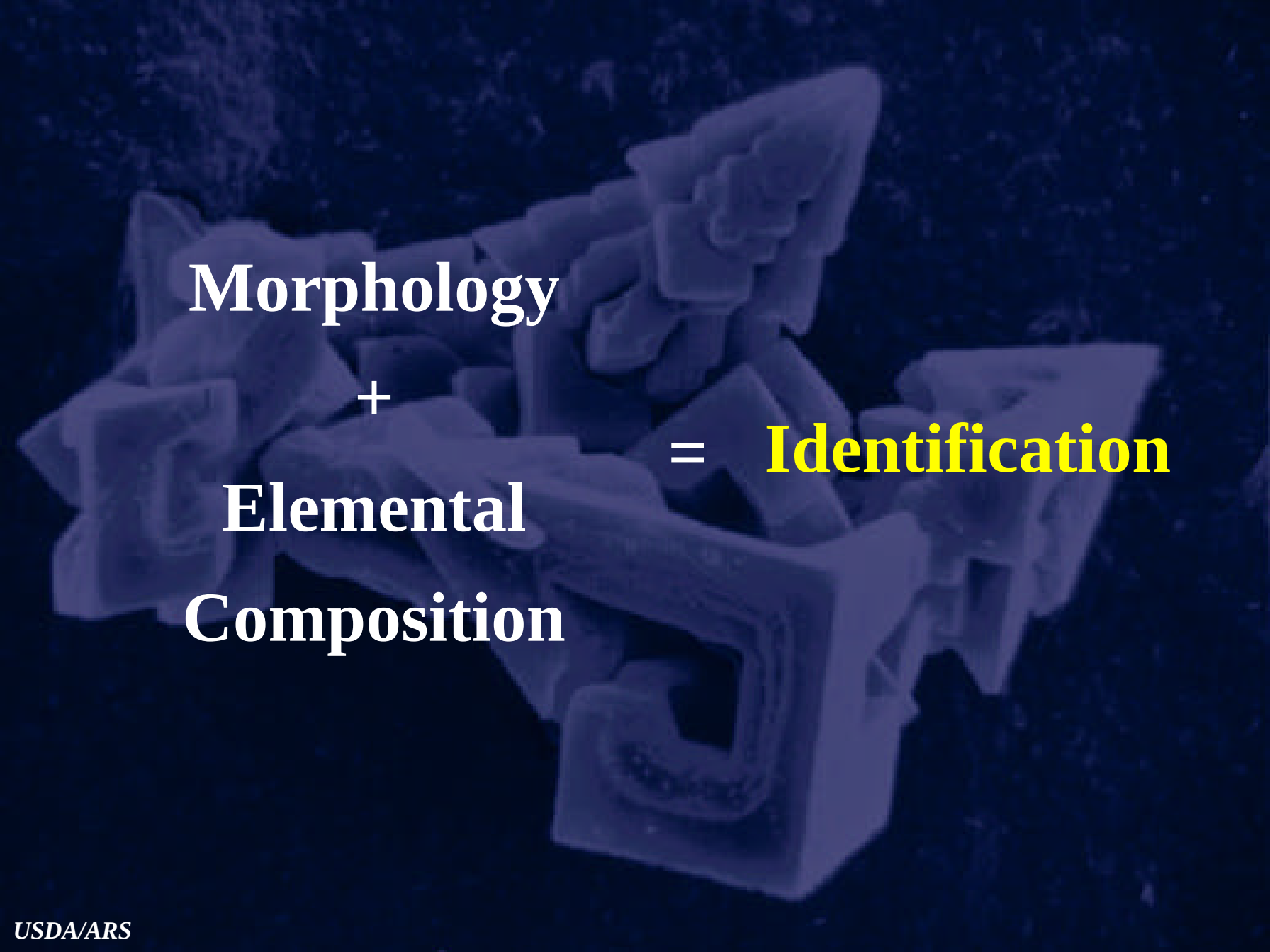
+

Digital Image Analysis (DIA)

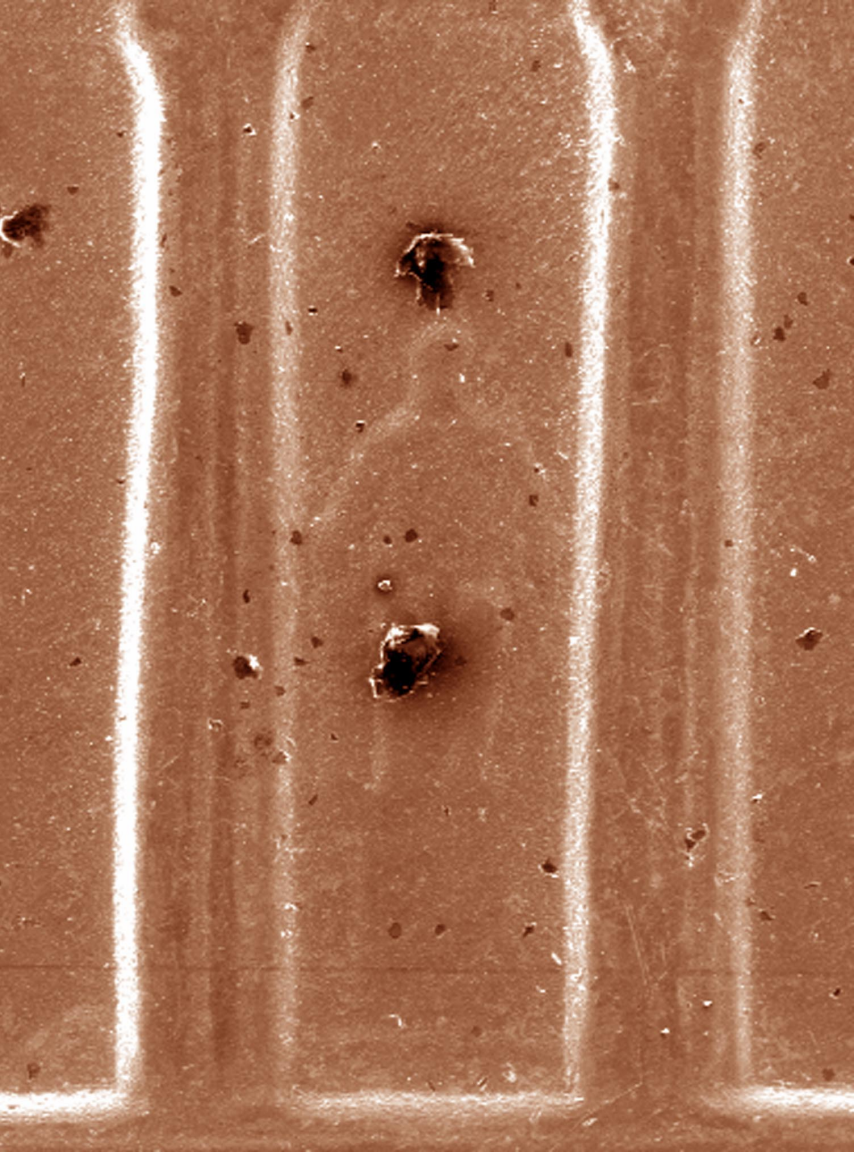
=

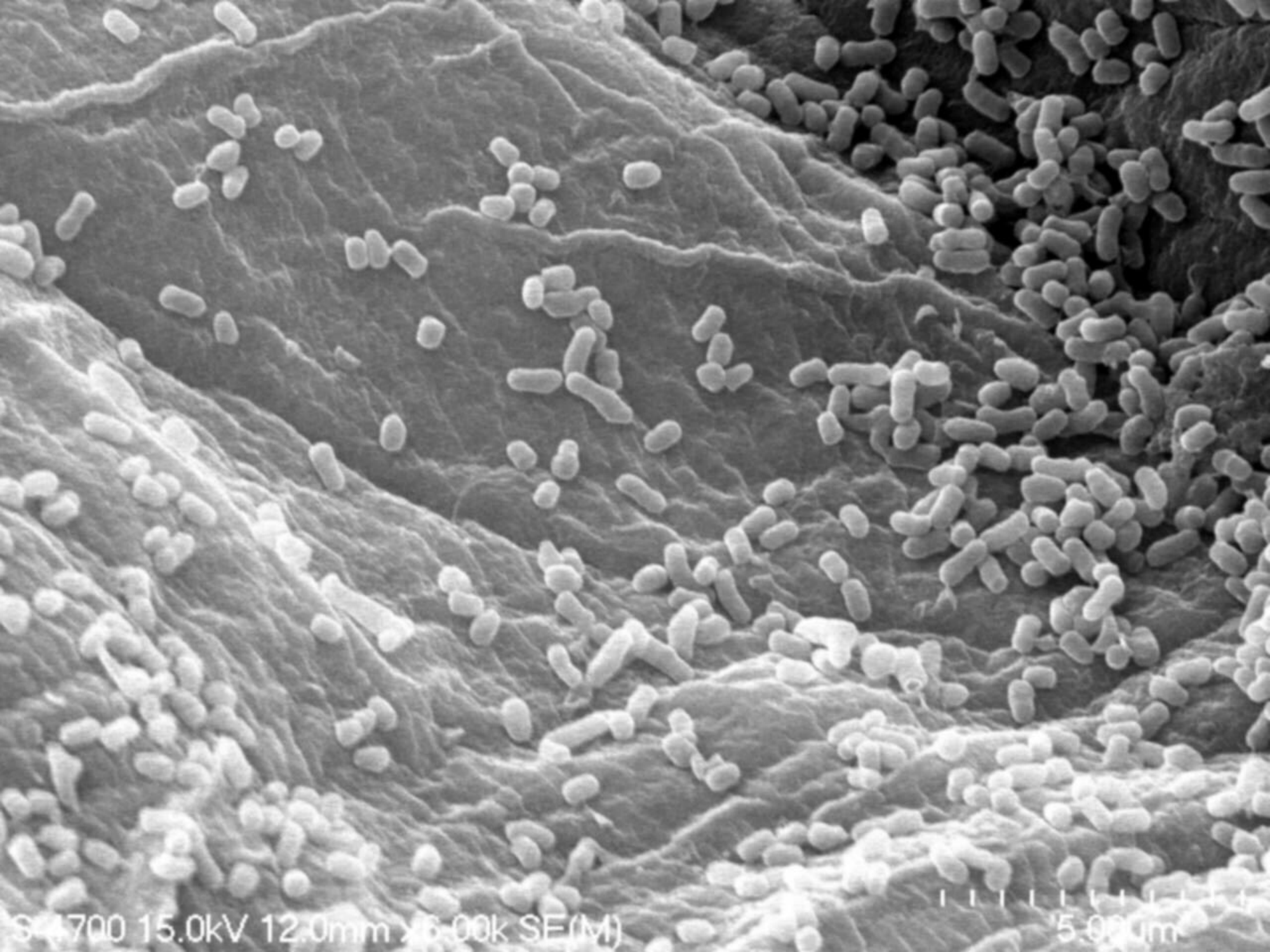
Electron Beam Analysis (EBA)


USDA
Partnerships with the Green Industry
Horticultural and Field Crops Research
Ohio Agricultural Research and Development Center, Wooster, Ohio

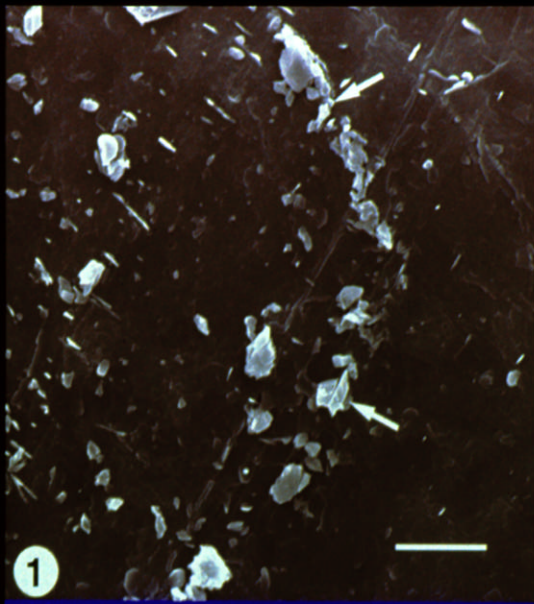


USDA/ARS

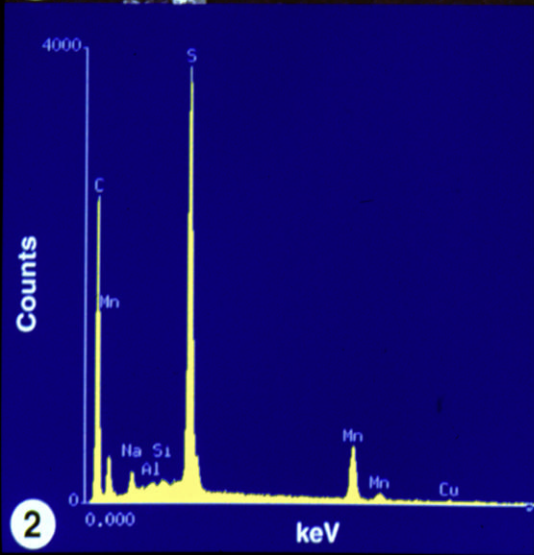



S-4700 15.0kV 12.0mm x6.00k SE(M)


Mancozeb
Angular particles of 1 - 10 µm
USDA/ARS



1



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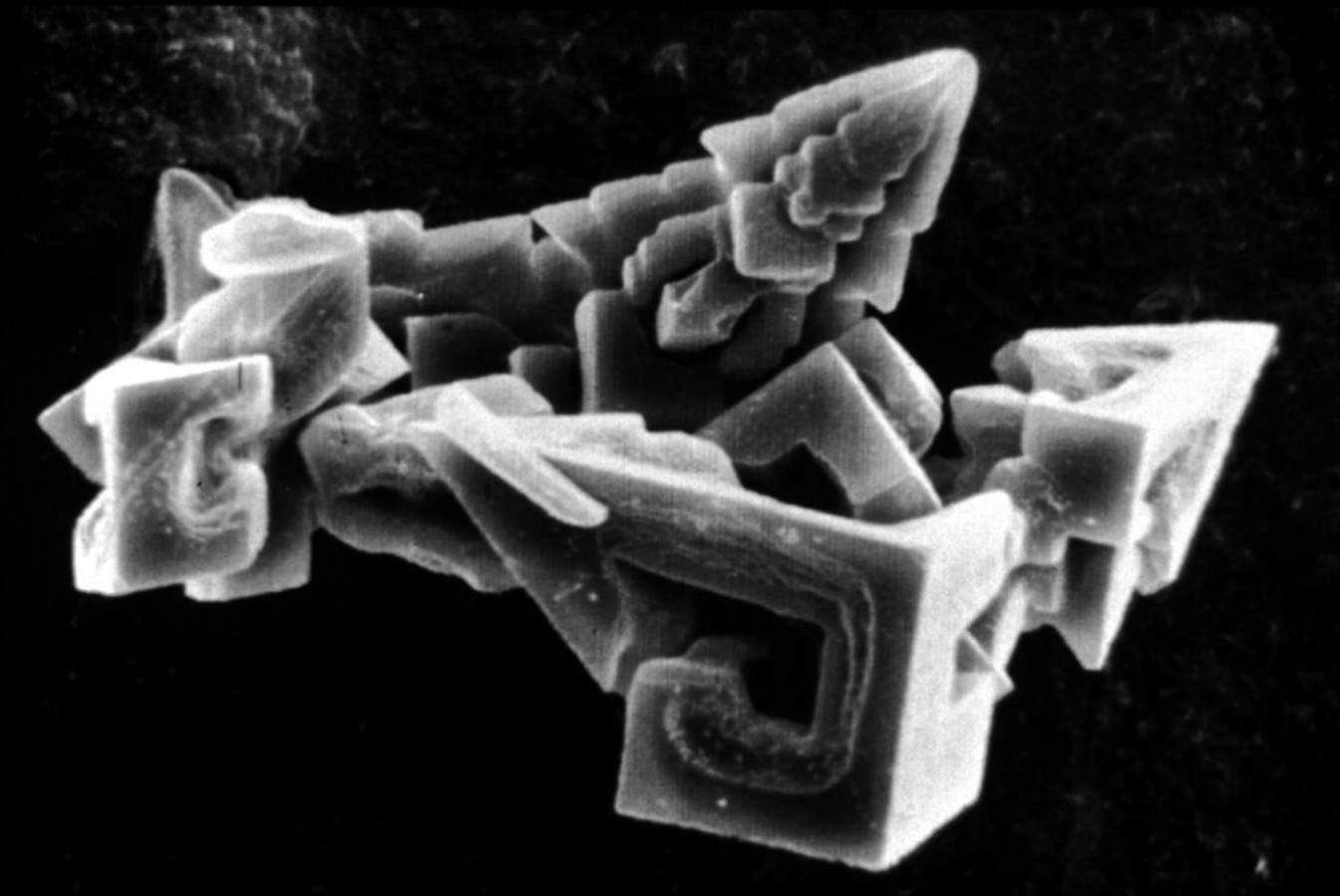
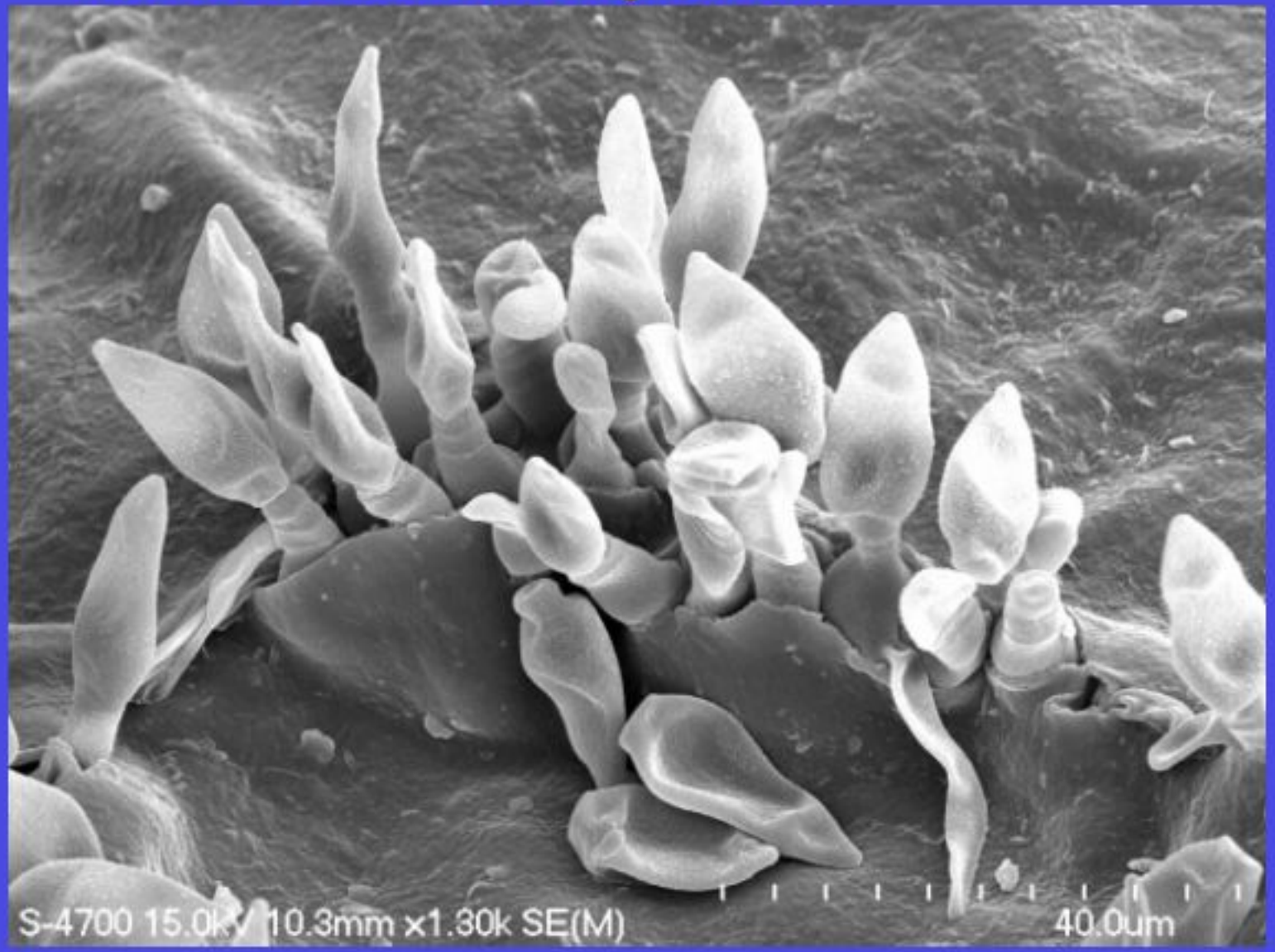
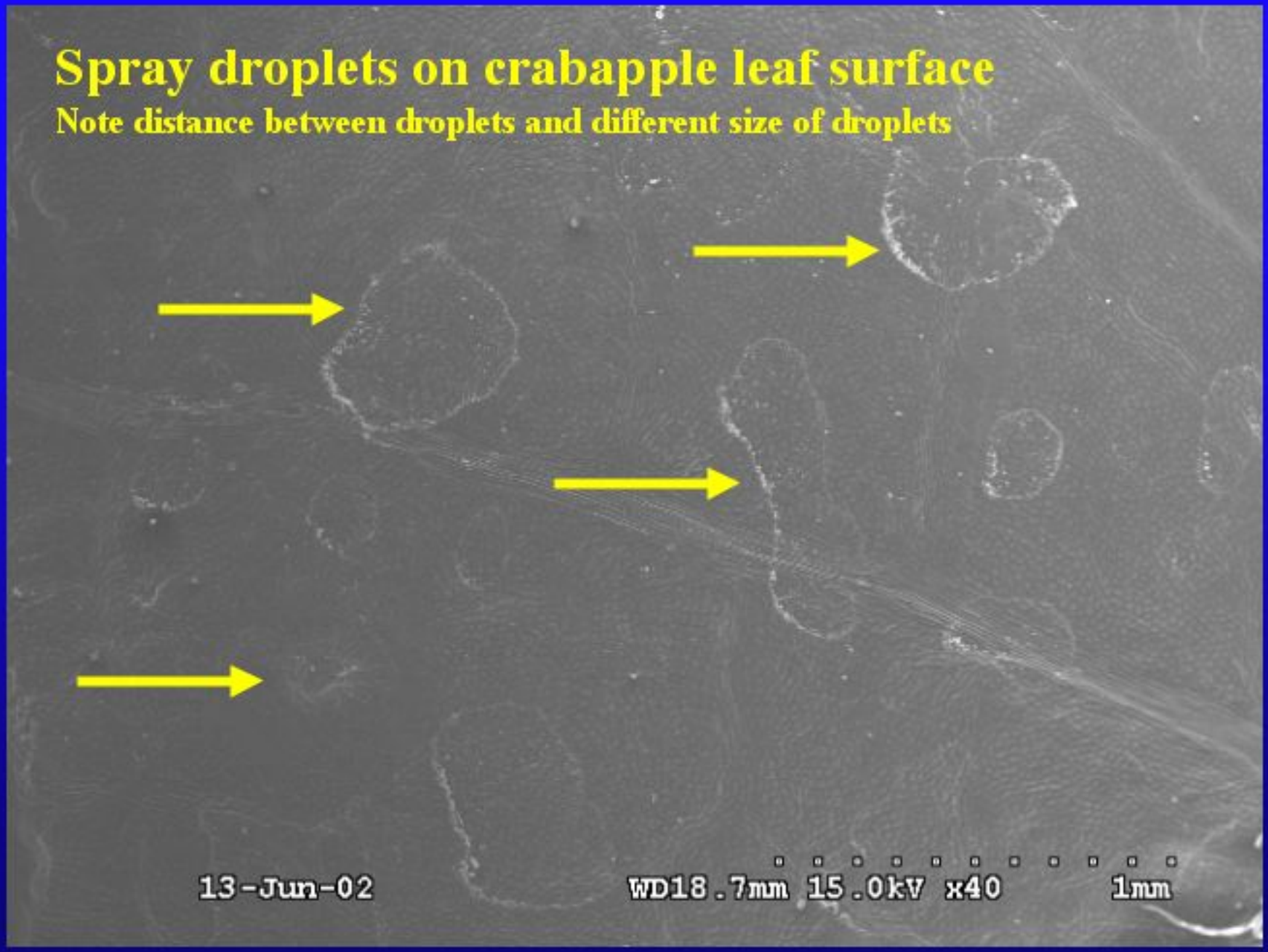


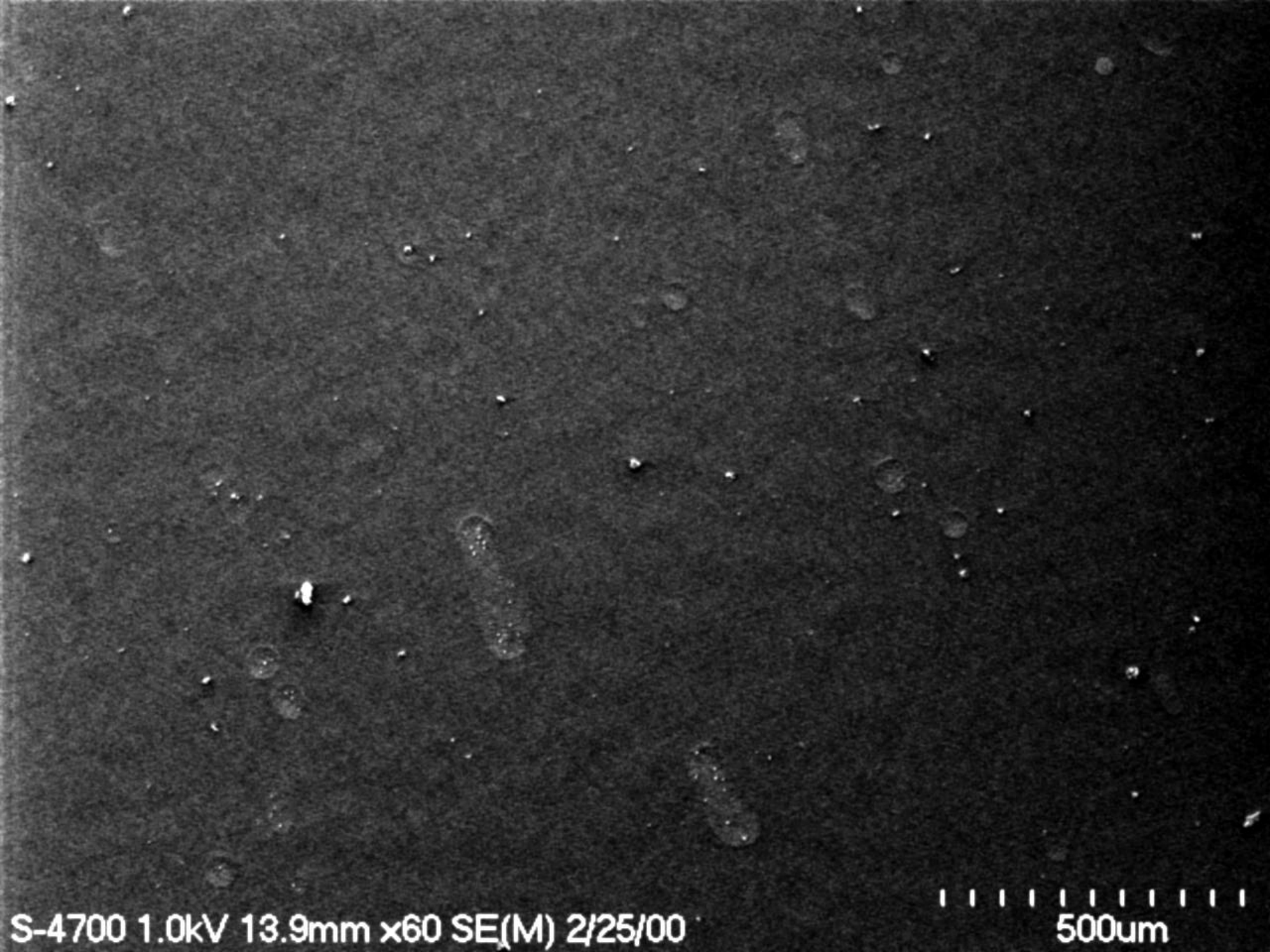
Apple scab infection is highly correlated with leaf wetness and temperature

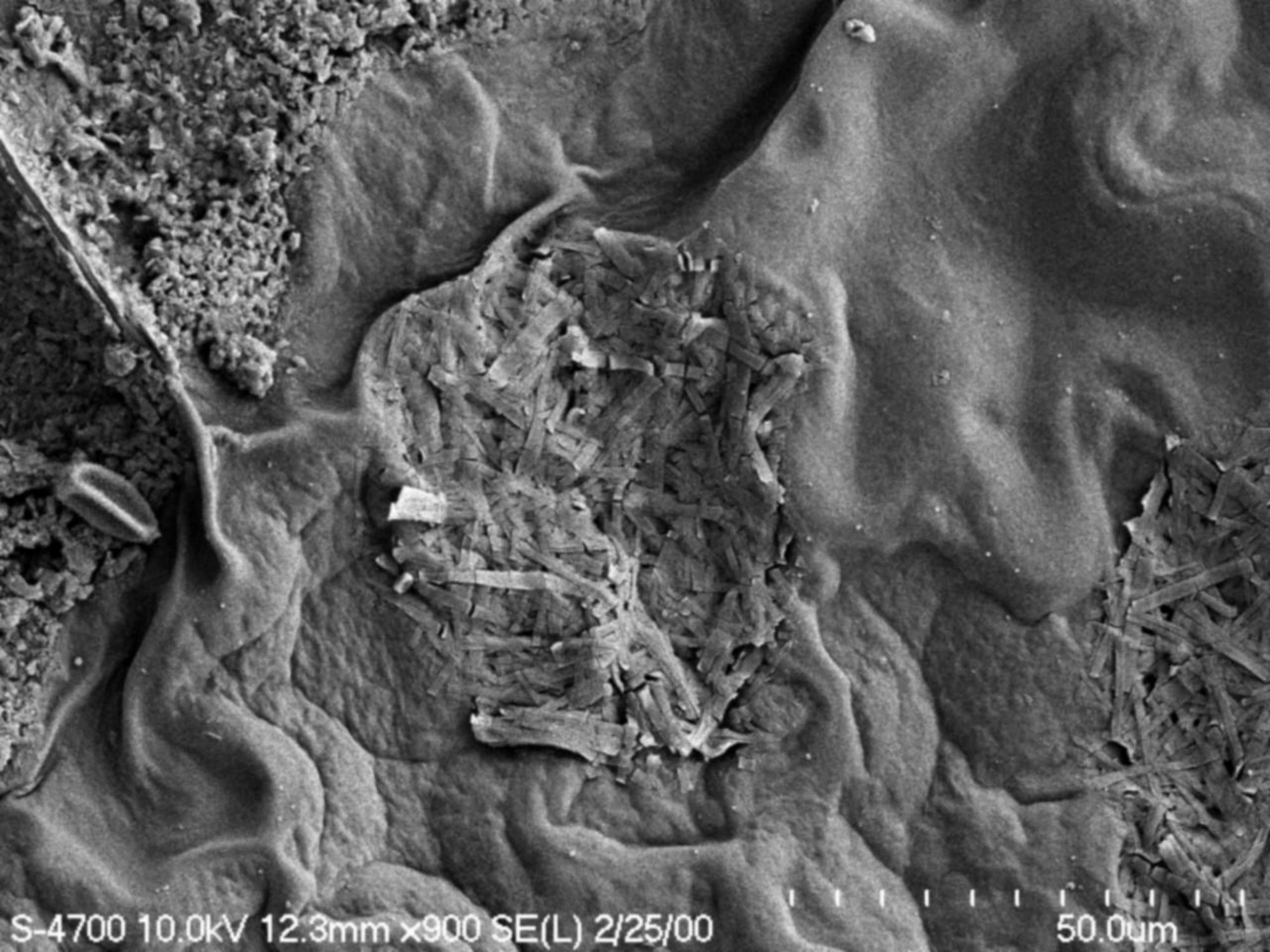


Spray droplets on crabapple leaf surface

Note distance between droplets and different size of droplets

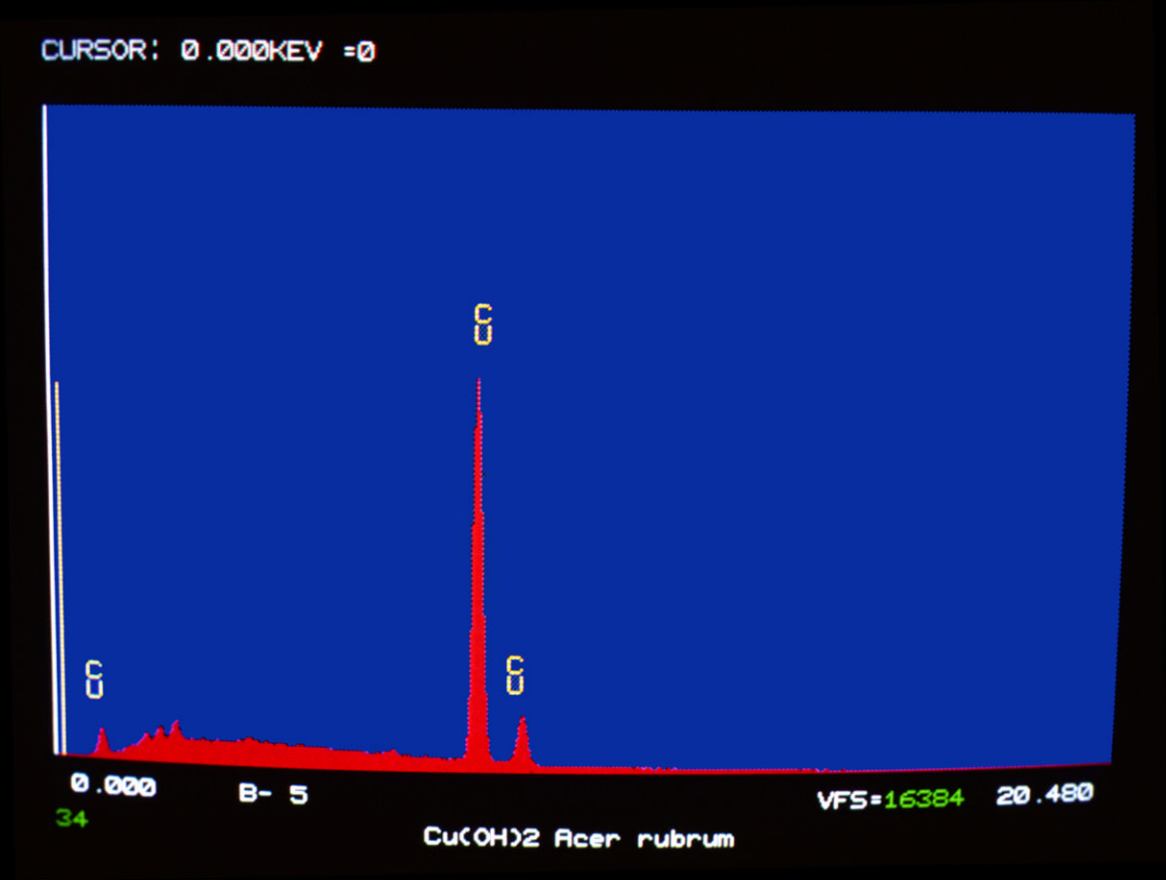



S-4700 1.0kV 13.9mm x60 SE(M) 2/25/00
500um


S-4700 10.0kV 12.3mm x900 SE(L) 2/25/00
50.0um




CU(OH)2 AR 125-2-2
MAG= 500X
31 MICRONS
CU


CURSOR: 0.000KEV =0
C
C
C
0.000
B- 5
VFS=16384
20.480
34
Cu(OH)2 Acer rubrum

Value to Stakeholders: EBA tracking will improve spray efficiency and reduce fungicide use and labor costs.

USDA/ARS

3. Enhanced control of BVW and scarabs with new injection methods for biological strategies.

USDA/ARS

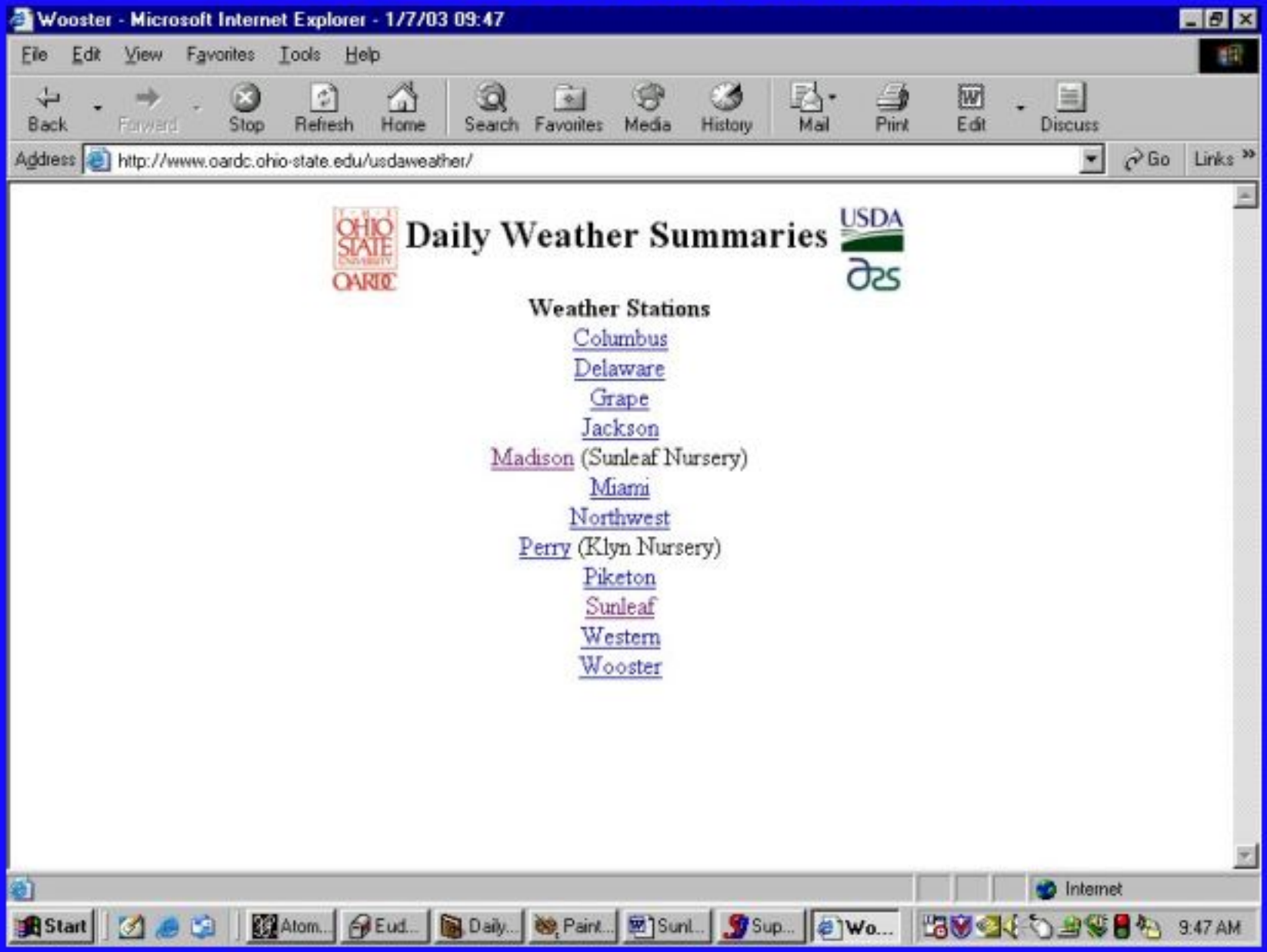
Value to stakeholders: Improved control of BVW and scarab pests reduce quarantine concerns.

USDA/ARS

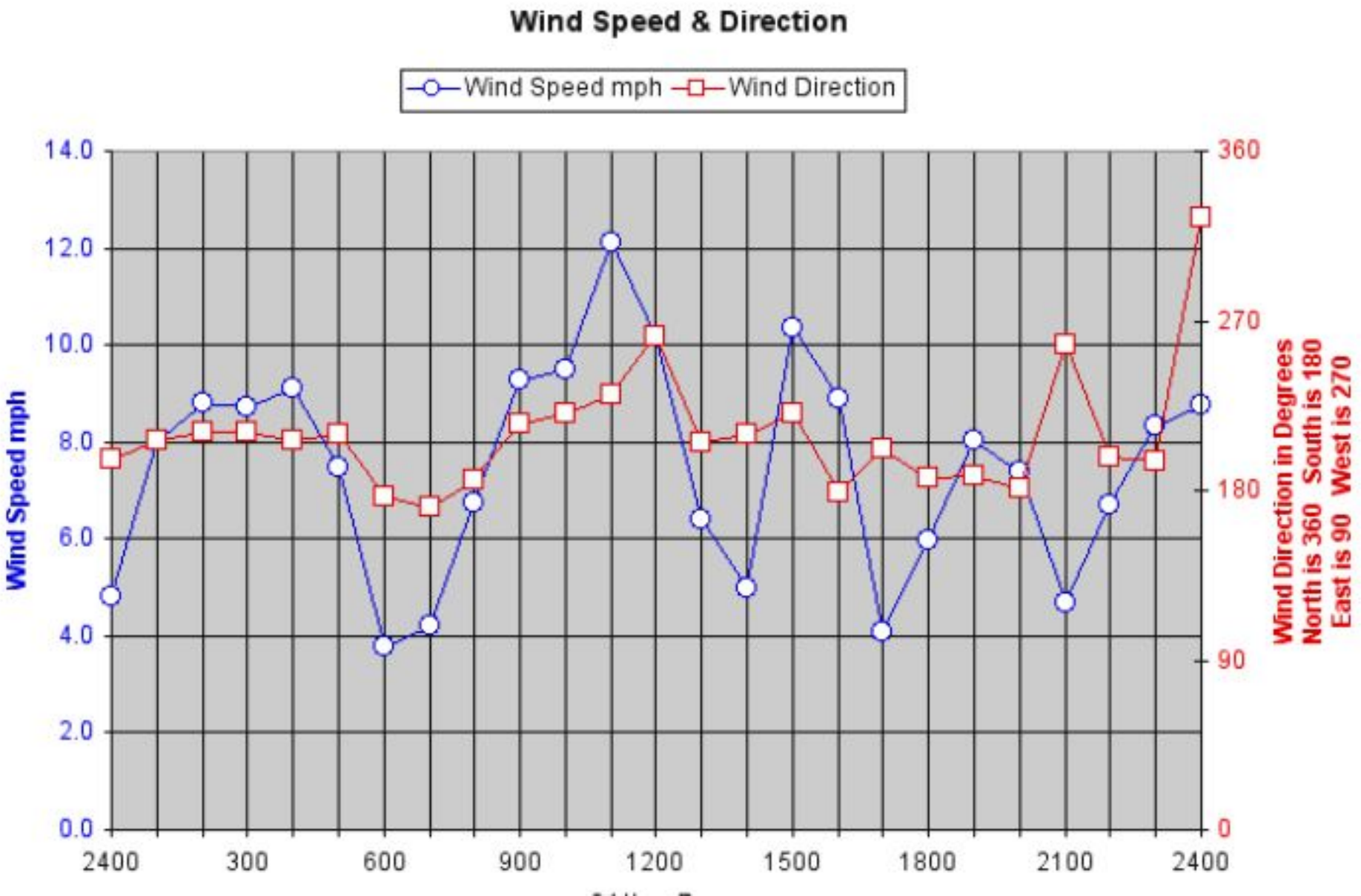
4. Establishment of the USDA, ARS, ATRU Weather Station Research Network with data also available for growers to predict the effects of adverse weather conditions on crop production.

Weather Station,
Sunleaf Nursery,
Madison, OH

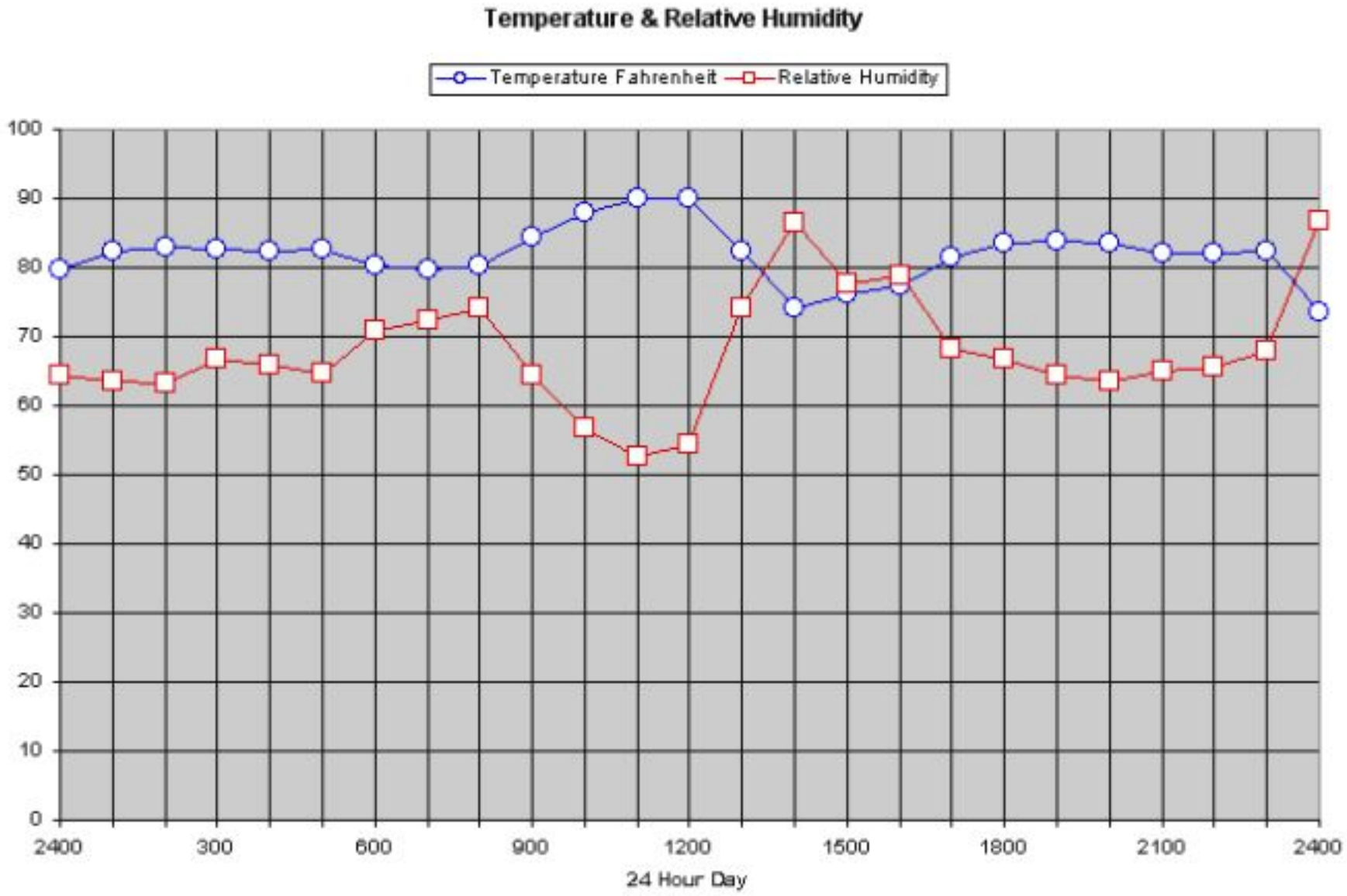
Web Page for accessing Lake County weather information: www.oardc.ohio-state.edu/usdaweather/



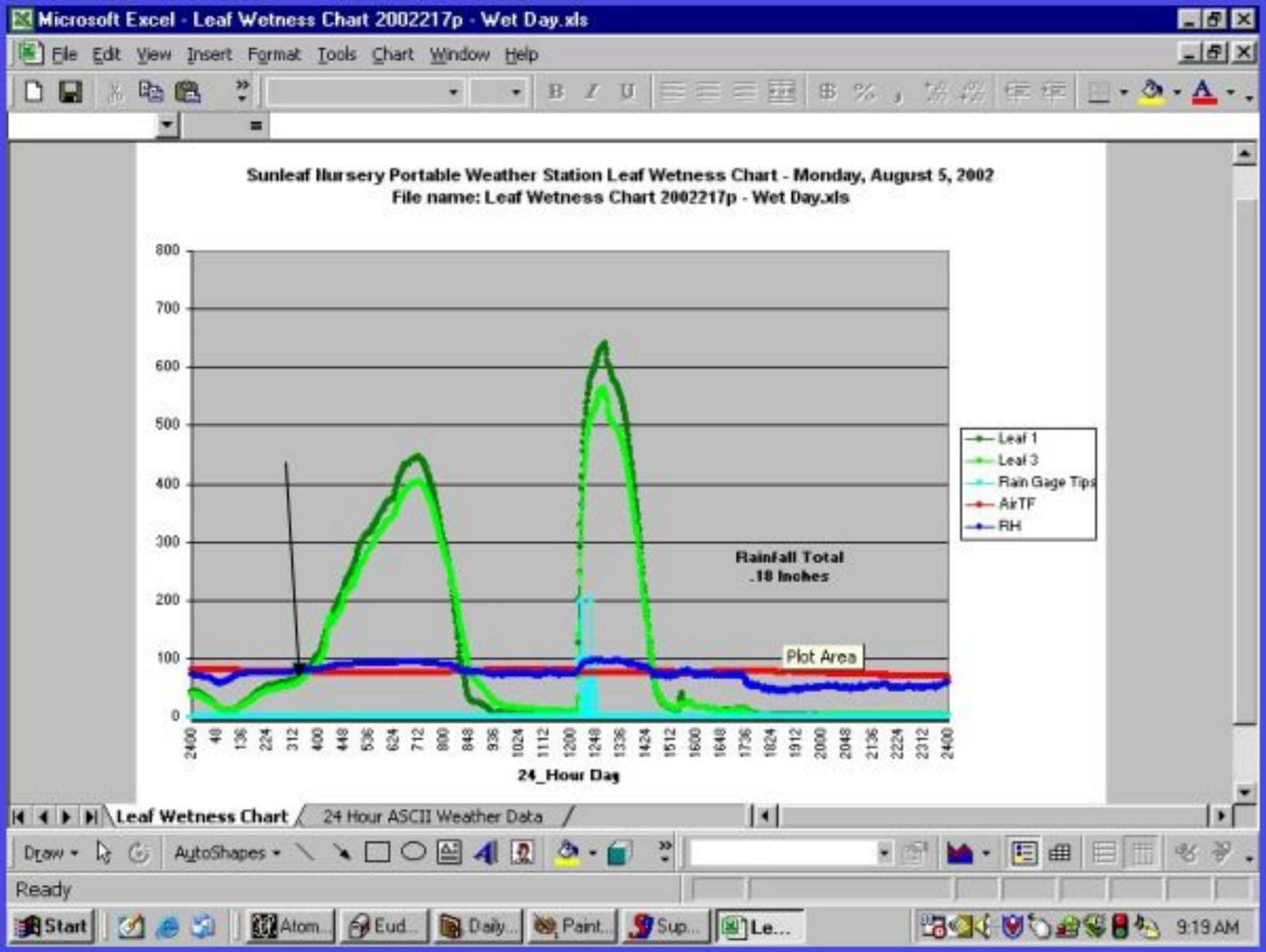
Data for wind speed and direction



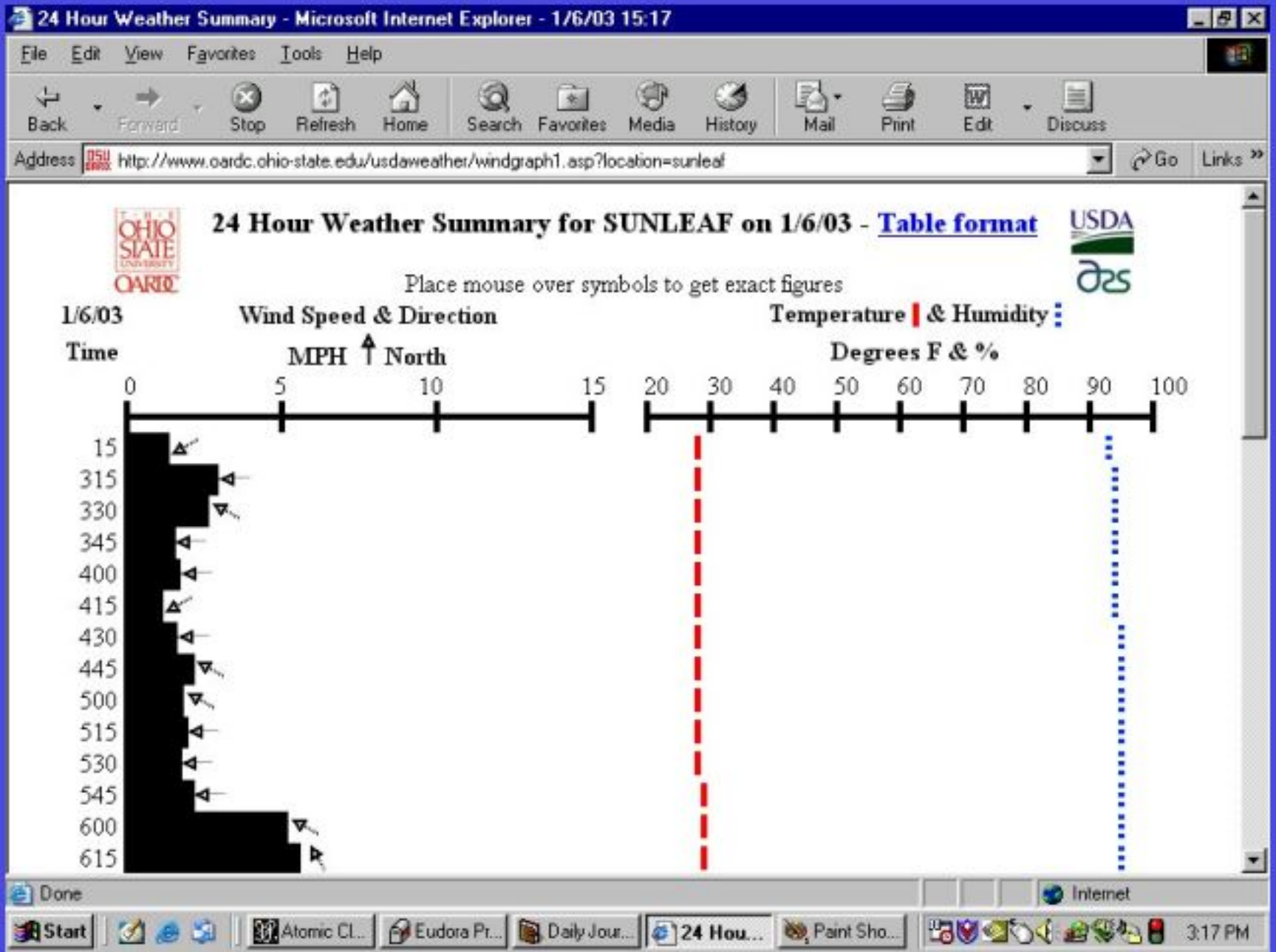
Data for temperature and relative humidity



Sample leaf wetness sensor data for dew on leaves and rainfall events on Aug. 5, 2002



Screen appearance of weather data in graphical format



Value to stakeholders:

Use of meteorological data will permit the use of disease and insect models to improve integrated pest and disease management.

Additional Funding and Partnerships

Horticulural Research Institute

OSU/OARDC: Extension

ANLA and SAF

OFA, ONLA, NGLCO and TAFVGA

IR-4

Technology Transfer Activities

Annual participation in nursery field days.

Presentations at the Ohio Nursery Short Course and CENTS of the ONLA.

Annual participation in the Ohio Florist' Asso.(OFA) trade show and short course.

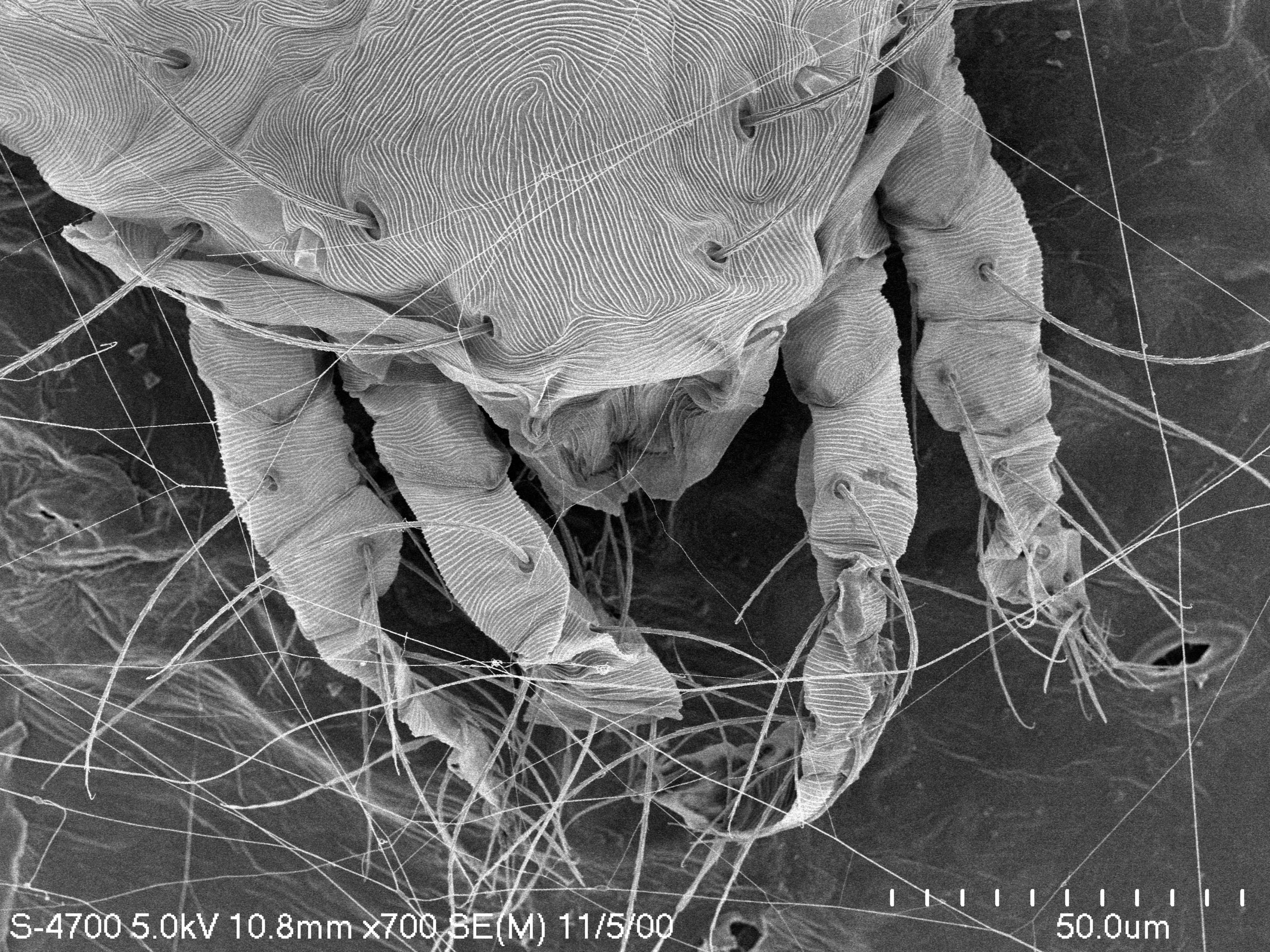
On-site technology transfer during research studies and during nursery spray-night workshops.

Memberships in OFA and ONLA Committees.

NGLCO Field Day 2000

Project Team

Charles Krause, Research Leader
Ross Brazee, Agricultural Engineer
Richard Derksen, Agricultural Engineer
Michael Klein, Research Entomologist
James Locke, Research Plant Pathologist
Michael Reding, Research Entomologist
Heping Zhu, Agricultural Engineer
Horticulturist, vacant


S-4700 5.0kV 10.8mm x700 SE(M) 11/5/00
50.0um